



Australian Government

Department of Education, Employment and Workplace Relations

MEM06003C Carry out heat treatment

Release: 1

MEM06003C Carry out heat treatment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers carrying out heat treatment of materials using a variety of equipment.
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Application of the Unit

Application of the unit	This unit applies to the heat treatment of ferrous and non-ferrous metals using a variety of equipment. Examples of applications include cast metal products, machine tooling, and forged and machined components. Simple heat treatment applications like annealing and/or heat/quench processes undertaken as incidental to trade work (e.g. toolmaking) are covered by Unit MEM06007B (Perform basic incidental heat/quenching, tempering and annealing). Band: A Unit Weight: 6
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine requirements of job	1.1. Job requirements are determined from engineering drawings, job sheet, or verbal instructions from metallurgist or supervisor.
2. Select heat treatment equipment	2.1. Appropriate equipment is selected for the required heat treatment.
3. Set up equipment	3.1. Equipment is set up according to standard operating procedures and manufacturers' instructions.
4. Work safely with hot metals	4.1. Safety clothing and personal protective equipment is used correctly according to standard operating procedures. 4.2. Emergency procedures are demonstrated according to approved safety instructions. 4.3. Safety signs and symbols are identified and understood. 4.4. Equipment is used according to specifications and standard operating procedures.
5. Heat treat material	5.1. Material is treated to achieve required result and may include preparation processes. 5.2. Material is piece or batch loaded and unloaded using equipment appropriate to the situation, according to standard operating procedures. 5.3. Correct temperature is maintained according to standard operating procedures.
6. Identify hazardous conditions	6.1. Hazards are identified and hazard control measures are implemented to maintain a safe work environment.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- setting up and operating heat treatment equipment

REQUIRED SKILLS AND KNOWLEDGE

- applying heat treatment
- safely loading furnace(s)

Required knowledge

Look for evidence that confirms knowledge of:

- work specifications
- material characteristics
- heat treatment applications, equipment and processes
- emergency procedures
- material preparation, quenching, preheating requirements
- material condition during heat treating process
- batch and/or piece loading of furnaces
- safe loading of furnaces
- hazards and control measures associated with heat treatment, including housekeeping
- use and application of personal protective equipment
- safe work practices and procedures

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to work safely with hot metals to carry out heat treatment of materials.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing heat treatment or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Guidance information for

EVIDENCE GUIDE

assessment	
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Range Statement**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Equipment	Gas, electric, oil fired furnaces, vacuum furnace, induction heating, kilns, heated baths, salt baths, specialised tongs/tools and lifting equipment
Material	Plain carbon steels, alloy steels, non-ferrous
Preparation processes	Coatings and packings; preheating; soaking; quenching; tempering; annealing; normalising; carburizing; sintering

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units	

Competency field

Competency field	Forging
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